



A non-profit corporation helping
to make buildings better for
people and the environment

Board of Directors:

President:
David B. Goldstein
NRDC

Vice-President:
Michael McAteer
National Grid, USA

Treasurer:
Steven Nadel
ACEEE

Secretary:
Douglas Baston
NEEP

Officer:
Brian Henderson
NYSERDA

Gregg Ander
SCE

Jeff Harris
NEEA

Kurt Stenberg
Consulting Engineer

John Wilson
CEC

Executive Director:
Jeffrey A. Johnson

Business Office

P.O. Box 653 (USPS)
142 East Jewett Blvd.
White Salmon, WA 98672
(509) 493-4468 (voice)
(509) 493-4078 (fax)

California Office

318 Harrison Street, #101
Oakland, CA 94607
(510) 465-7448 (voice)
(510) 465-7869 (fax)

www.newbuildings.org

Memorandum

Date: October 28, 2002
To: Tav Commins
From: Jeff Johnson
cc: Bill Pennington
Bryan Alcorn
Re: ACM Manual Appendix – Acceptance Testing

Comments

This memorandum outlines a number of comments that were received on the Draft ACM Manual Appendix and proposes resolutions to those comments. The resolutions, if approved by the California Energy Commission (Commission), will be incorporated into the final Draft ACM Manual and a revised report on Acceptance Testing.

The comments are as follows:

Basis for Requirements

The basis for the Acceptance Requirements is discussed in Section 1.8 of the April 8th report. It states that the cost-effectiveness of Acceptance Testing should be included in the overall “cost” of the measure, not analyzed separately. When measures were analyzed for the proposed 2005 Energy Efficiency Standards for Nonresidential Buildings (Standards) these costs were not included.

The Warren-Alquist Act requires that the Standards be cost-effective when taken in their entirety. Acceptance testing costs, when included with the other measures required by the Standards, will not adversely impact the overall costs-effectiveness of the Standards.

Documentation Requirements

Documentation requirements were proposed in Section 2.1 of the Draft ACM Manual. Section 2.1 will be deleted in its entirety. These requirements created unnecessary duplication of information typically required for a building permit and contract documents.

The Nonresidential Design Manual will include a discussion of project documentation and design intent as tool for facilitating building commissioning.

Plan Review

Each of the Acceptance tests in the proposed ACM Manual contains a section titled “Plan Review”. These sections will be deleted from each of the proposed tests. This requirement is redundant and does not facilitate the acceptance testing process.

Outside Air Acceptance

A number of changes will be made to the tests including:

1. Two sections will be created: Variable Air Volume and Constant Volume.
2. The second step in Construction Inspection will become the first step in equipment start-up,
3. Text will be added to illustrate methods of disabling the economizer, and
4. In Step 2, VAV boxes will be drive to a minimum of 30% (not fully closed) and outside airflow rates will be required to be at least 90% of design minimums.

Package HVAC System Acceptance

A number of changes will be made to the tests including:

1. Text will be added to illustrate methods of simulating loads and disabling the economizer,
2. Heating tests will be consolidated into single test,
3. Outside air flow measurement will be eliminated (covered in new step noted in Outside Air Acceptance above),
4. The equipment will not be tested for satisfying loads in Step 5,
5. The outside air damper will not be required to remain closed in Step 7, and
6. Step 9 is eliminated because Demand Control Ventilation is covered in a separate test.

Air Distribution System Acceptance

The text of this requirement will be modified to eliminate restating requirements contained in the Standards and the first step in construction inspection will be eliminated because it is covered in the third bullet.

Lighting Controls

The text will be revised to reflect the proposed lighting control requirements including:

1. Revising Step 1 to require 65% lighting power reduction and verify multi-level control, and
2. Adding a step to the construction inspection that verifies proper circuiting to facilitate daylighting.

Economizer Acceptance

A number of changes will be made to the tests including:

1. Combine package and built-up systems into one acceptance test,
2. Eliminate the first two bullets of Construction Inspection because they are redundant,
3. Update to Standards reference to acceptable economizer control methods,

4. Text will be added to illustrate methods of simulating economizer operation,
5. Clarifying barometric relief system inspection, and
6. Add a check to Step 1 to observe that entrance/exit doors are not forced open when the economizer operates.

Demand Control Ventilation

Tests to verify outside air requirements will be eliminated as they are covered in the outside air acceptance section.

Variable Frequency Drives

A number of changes will be made to the tests including:

1. Clarifying sensor calibration at the Construction Inspection step,
2. Text will be added to illustrate methods of witnessing proper supply fan response,
3. Require system to operate at design air flow instead of full heating or cooling in Step 1, and
4. Require minimum VAV airflow or 30% of design air flow instead of simulating low cooling load conditions.